

NIKOLENKO, L.N.; KOPTYUG, V.A.

Alkylation of thiophenols with amines. Zhur.ob.khim. 25 no.9:
1757-1759 S '55. (MLRA 9:2)

L.Moskovskiy khimiko-tekhnologicheskiy institut imeni D.I.
Mendelayeva.
(Alkylation) (Thiels)

KOPTYUG, V.A.

✓ Mechanism of formation of
derivatives

PM 204

KOPTYUG, V. A., Cand Chem Sci -- (diss) "Study of the mechanism of vapor phase catalytic isomerization of monochloronaphthalenes by ^{the} radioactive tracer method." Mos, 1957. 7 pp (Min of Higher Education USSR, Mos Order of Lenin Chem-Tech Inst im D. I. Mendeleyev), 120 copies (KL, 52-57, 103)

- 10 -

Koptyug, V. A.

VOROZHTSOV, N.N., ml.; KOPTYUG, V.A.

Mechanism of the conversion of α -tetralone oxime into
 α -naphthylamine. Khim.nauka i prom. 2 no.5:657 '57. (MIRA 10:12)

1.Moskovskiy khimiko-tekhnologicheskii institut im. D.I. Mendeleeva.
(Naphthylamine) (Naphthalenone)

AUTHORS: Nikolenko, L. N., Koptyug, V.A., SOV/196-58-1-32/46
Savinkova, Ye. V.

TITLE: On the Interaction of Benzyl Amine With Hydrogen Sulfide
(O vzaimodeystvii benzilamina s serovodorodom)

PERIODICAL: Nauchnyye doklady vysshey shkoly, Khimiya i khimicheskaya
tekhnologiya, 1958, Nr 1, pp. 133 - 134 (USSR)

ABSTRACT: From an analogy with the reaction of the thiophenols with
amines (Refs 1,2), the formation of mercaptan could be
expected in connection with the interaction of the latter
with hydrogen sulfide. It has turned out, however that a
peculiar S-alkylation takes place which leads to the
formation of benzyl mercaptan. In the case of an 18 hours'
heating of a mixture of benzyl amine, sodium sulfide and
HCl at from 240 to 245⁰, the yield of benzyl mercaptan
amounted to 38,8% moreover, 4,2% dibenzyl-disulfide were
isolated. The mechanism of the interaction of hydrogen sulfide
with benzyl amine is obviously analogous to the mechanism
of alkylation of the thiophenols by amines (Ref 2).
An experimental part follows.

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On the Interaction of Benzyl Amine With
Hydrogen Sulfide

SOV/156-58-1-32/46

In a footnote the author corrects the data given in his report (Ref 1): The substance with a melting point of from 50 to 51° - which is described there - is not a methyl- β -naphthyl sulfide, but an acetyl derivative of the N-methyl- β -naphthyl amine. There are 6 references, 3 of which are Soviet.

ASSOCIATION: Kafedra tekhnologii organicheskikh krasiteley Moskovskogo khimiko-tekhnologicheskogo instituta im. D. I. Mendeleyeva (Chair of the Technology of Organic Dyes at the Moscow Chemical and Technological Institute imeni D. I. Mendeleyev)

SUBMITTED: September 14, 1957

Card 2/2

KOPTYUG, V. A.

79-2-22/64

AUTHORS: Vorozhtsov, N. N. , Koptug, V. A.

TITLE: Catalytic Transformations of Haloid Derivatives of the Aromatic Series (Kataliticheskiye prevrashcheniya galoïdproduktov aromati- cheskogo ryada) IV. Investigation of the Catalytic Isomerization Mechanism of Monochloronaphthalenes by the Method of Marked Atoms (IV. Izucheniye mekhanizma kataliticheskoy izomerizatsii monokhlor- naftalinov metodom mechenykh atomov)

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 2, pp. 372 - 383 (USSR)

ABSTRACT: In the works of an author (references 2, 3), which are devoted to the investigation of the gas-phase catalytic isomerization of mono- chloro- and monobromonaphthalenes in aluminum oxide and aluminum silicate, values were obtained which indicate an intramolecular course of the reaction. (Analogous values were obtained by Brezh- neva and Roginskiy (reference 30) in the field of liquid-phase isomerization.) In the present paper the authors show that 2-chloro- naphthalene-1-C¹⁴ is mainly formed in the isomerization of 1-chloro- naphthalene-1-C¹⁴ with aluminum silicate as a catalyst at 355-360°C. This fact excludes the possibility of an intermediate formation of naphthalene, as in this case an equimolar mixture of 2-chloronaph- thalenes marked in the positions 1,4,5 and 8 would have to be formed.

Card 1/4

79-2-22/64

Catalytic Transformations of Haloid Derivatives of the Aromatic Series. IV. Investigation of the Catalytic Isomerization Mechanism of Monochloronaphthalenes by the Method of Marked Atoms

in the isomerization. 1-chloronaphthalene-1-C¹⁴ was obtained from the chlorhydrate of 1-naphthylamine-1-C¹⁴ according to the reaction of Zandmayer (references 6 and 7) with a yield of ~ 50 %. The isomerization was performed with an aluminum silicate catalyst in a hydrogen chloride current at 355 - 365°C. 2-chloronaphthalene was converted to 2-naphthol by means of 0.8 n. sodium hydroxide solution at 365°C. By its nitrosation (reference 8) 1-nitroso-2-naphthol was obtained. The 2-isomer formed in the isomerization of 1-chloronaphthalene-1-C¹⁴ consists in 93,8% of 2-chloronaphthalene-1-C¹⁴. This means that at least 91,7% of the 1-chloronaphthalene molecules isomerize to 2-chloronaphthalene without an intermediate formation of naphthalene. The "carbon" ions (karboniyevyye ioni) (I) and (III) forming on addition of the proton to the molecule of the naphthalene halide are analogous to the intermediate cations. These form in the electrophile halogenation of naphthalene (confer reference 1). "Fluorone"-compounds were hitherto not obtained. The presence of the proton necessary for the course of the isomerization explains the specially smooth course of the isomerization of naphthalene halides in the presence of hydrogen halides (in their ab-

Card-2/4.

Catalytic Transformations of Haloid Derivatives of the Aromatic Series. IV. Investigation of the Catalytic Isomerization Mechanism of Monochloronaphthalenes by the Method of Marked Atoms

79-2-22/64

sence the protons yield the catalyst). The exchange of halides, in the interaction of naphthalene halides and hydrogen halides (reference 3), shall not be considered a result of the isomerization reaction, but as a parallel process. This is confirmed by the fact that under the conditions when fluornaphthalenes do not isomerize, fluorine is nevertheless substituted by chlorine. Summary: 1) The method of the splitting of 2-chloronaphthalene was worked out. This permits the removal of the carbon atom in the form of CO_2 which is in position 2. The method may also be applied to other 2-substituted naphthalenes that can be converted to 2-naphthol. 2) The earlier not described 1-naphthylamine- 1-C^{14} and 1-chloronaphthalene- 1-C^{14} were synthesized. 3) In the catalytic isomerization of 1-chloronaphthalene- 1-C^{14} at $355\text{-}365^\circ\text{C}$ the chlorine is mainly (93,6%) displaced to position 2. This excludes (for the given conditions) the intermolecular isomerization mechanism of monochloronaphthalenes with an intermediate formation of naphthalene. 4) The authors suggested the innermolecular isomerization mechanism of monochloronaphthalenes which admits an intermediate formation of halogen ions. There are 3 figures, 1 table, and 30 references, 14 of which are Slavic.

Card 3/4

Moscow Chem Tech Inst in D. I. Mendeleev

AUTHORS: Vorozhtsov, N. N.(jun.), Koptyug, V. A. SOV/79-28-6-49/63

TITLE: The Conversion Mechanism of α -Tetralonoxime to α -Naphthylamine (Mekhanizm prevrashcheniya oksima α -tetralona v α -naphthylamin)

PERIODICAL: Zhurnal obshego khimii, 1958, Vol. 28, Nr 6, pp. 1646 - 1656 (USSR)

ABSTRACT: The authors investigated the conversion of α -tetralon to α -naphthylamine on the conditions described by Schroeter (Shreter) and his collaborators (Ref 11); i.e. on its heating with 1,3-mole acetic anhydride in glacial acetic acid in the presence of hydrogen chloride at 100°. Besides the earlier obtained (Ref 11) chlorine hydrate of α -naphthylamine (31 %) and N-acetyl- α -naphthylamine (3,3 %) also α -tetralon (10,2 %), 2-chloro-1-keto-1,2,3,4-tetrahydronaphthalene (2,0 %) (formula I) and 2-methyl-3,4-dihydronaphth-1',2':4,5-oxazole (II, 8,6 %) are obtained. Compound (I) was identified as oxime (Ref 14). The structure of the earlier not described compound (II) was proved by the dehydration with diphenylsulfide (Ref 15) to the 2-methyl-(naphth-1',2':4,5-oxazole) (identified as picrate and

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SOV/ 79-28-6-49/63

The Conversion Mechanism of α -Tetralonoxime to α -Naphthylamine

methyl iodide). The determination of the nature of the secondary products of the above mentioned reaction makes it possible to explain the mechanism of the conversion of the α -tetralonoxime to α -naphthylamine. The O-acetyl derivative of the α -tetralonoxime occurs as first product of the reaction (III). This compound converts on heating in glacial acetic acid at 100° in the presence of hydrogen chloride to the α -naphthylamine (scheme 1), N-acetyl- α -naphthylamine, α -tetralon, 2-chloro-1-keto-1,2,3,4-tetrahydronaphthalene and 2-methyl-3',4'-dihydronaphth-1',2':4,5-oxazole. The structure of the latter thus was determined by conversion (dehydration) to 2-methyl-(naphth-1',2':4,5-oxazole) by means of diphenylsulfide, as well as synthetically by proceeding from the 2-bromo-1-keto-1,2,3,4-tetrahydronaphthalene and acetamide. The 2-methyl-3',4'-dihydronaphth-1',2':4,5-oxazole converts on boiling with hydrochloric acid to β -naphthol. There are 33 references, 3 of which are Soviet.

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskii institut im. D. I. Mendeleeva (Moscow Chemo-Technological Institute imeni D. I. Mendeleev)

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SOV79-28-6-49/63
The Conversion Mechanism of α -Tetralonoxime to α -Naphthylamine

SUBMITTED: June 3, 1957

1. Amines
2. Organic compounds--Chemical reactions

Card 3/3

AUTHORS: Verozhtsov, M. H., jun.,
Koptug, V. A.

SOV/79-28-11-18/55

TITLE: On the Dehydration of " α -Tetralon" With Selenium, and
on the Synthesis of 1-Naphthol-1-C¹⁴ (O degidrirovani
 α -tetralona selenom i sinteze 1-naftola-1-C¹⁴)

PERIODICAL: Zhurnal obshchey khimii, 1958, Vol 28, Nr 11,
pp 2981 - 2987 (USSR)

- ABSTRACT: Of all possible methods for synthesizing 1-naphthene
the dehydration of " α -tetralon" (I) with selenium
at 330-335° for 9 hours as carried out by Darzens
and Levy (Ref 2) (Darzan, Levi) met with the greatest
interest. According to its description this naphthol
was obtained in a yield of 75%, whereas its yield
in the dehydration of " α -tetralon" with sulfur
(240°, 4 hours) amounted to 40%. The authors checked
the data of the two scientists and found that on
heating " α -tetralon" at 330° during 10 hours with
selenium a complex compound of reaction products is
formed in which the 1-naphthol corresponded only to a
yield of 25.7%. From the mixture also the " α -tetralon"

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On the Dehydration of "α-Tetralon" With Selenium, and
on the Synthesis of 1-Naphthol-1-C¹⁴

SOV/79-28-11-18/55

(23%), a neutral product of the composition C₂₀H₁₂O¹²
(12.2%), and an amorphous compound of phenol character
were separated. The compound C₂₀H₁₂O, according

to its melting point and according to that of the picrate,
seems to be dinaphtho-(1',2' : 2,3; 1'',2'' : 4,5)-
furan (II), the formation of which can be explained
according to the scheme 1. The data by the above
scientists are also refuted by the fact that 1-naphthol
is capable of reacting with selenium under the
formation of furan (IV) (Ref 5). From the reaction
mass the authors could separate only 15% initial
1-naphthol at 330°C during 10 hours. The yield of
(IV) amounted to 31% (of the unpurified product!).
Also the following dehydration experiments of the
substituted "α-tetralon" and of other cyclic
ketones tended to refute the data given by these
two scientists. The authors therefore had to turn
away from the complex dehydration of "α-tetralon" (I)
with selenium and tried to achieve its transformation
into 1-naphthol by the bromination and separation of

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On the Dehydration of " α -Tetralon" With Selenium, and SOV/79-28-11-18/55
on the Synthesis of 1-Naphthol-1-C¹⁴

hydrogen bromide (Scheme 2). This bromination takes place easily to the 2-bromo-1-keto-1,2,3,4-tetrahydro naphthalene (V). The separation of hydrogen bromide from (V) under the formation of 1-naphthol is better carried out with triethylamine (75-76%) than with diethyl aniline. Based on the results obtained the synthesis of 1-naphthol-1-C¹⁴ in a yield of 63.5% was carried out (calculated on " α -tetralon"-1-C¹⁴) proceeding from the 1-keto-1,2,3,4-tetrahydro naphthalene-1-C¹⁴. In this case the reaction took place without the separation of bromo-tetralon (V). There are 1 table and 24 references, 2 of which are Soviet.

ASSOCIATION: Moskovskiy khimiko-tehnologicheskii institut imeni D.I.Mendeleyeva (Moscow Chemotechnological Institute imeni D.I.Mendeleyev)

Card 3/4

VORONTOV, N.N.; KOPTYUG, V.A. . .

Mechanism of the catalytic isomerization of monochloronaphthalenes.
Org. polupred. i kras. no.1:87-91 '59. (MIRA 14:11)
(Isomerzation)

5(3)

SOV/63-4-3-30/31

AUTHORS: Koptug, V.A., Gerasimova, T.N. Vorozhtsov jr., N.N.

TITLE: Migration of Alkylsulfonyl Residue in Alkyl-(1-Chloronaphthyl-8)-Sulfones

PERIODICAL: Khimicheskaya nauka i promyshlennost', 1959, Vol 4, Nr 3, pp 414-415 (USSR)

ABSTRACT: The study of the reactions of peri-substituted naphthalenes has demonstrated that heating of methyl-(1-chloronaphthyl-8)-sulfones with concentrated hydrochloric acid for 5 hours at 200°C causes the irreversible migration of the sulfonyl residue. It has been shown that the migration of the alkylsulfonyl residue is characteristic only for 1,8-isomers and seemingly connected with the spatial interaction of peri-substitutes leading to the migration of these substitutes from the plane of the naphthalene nucleus.

Card 1/2 There are 4 non-Soviet references.

SOV/63-4-3-30/31

Migration of Alkylsulfonyl Residue in Alkyl-(1-Chloronaphthyl-8)-Sulfones

ASSOCIATION: Moskovskiy Khimiko-tehnologicheskii institut imeni D.I. Mendeleyeva
(Moscow Chemical-Technological Institute imeni D.I. Mendeleev)

SUBMITTED: February 2, 1959

Card 2/2

5(3)

SOV/63-4-3-25/31

AUTHORS: Vorozhtsov, Jr., N.N., Koptug, V.A.

TITLE: The Study of the Isomerization of Monomethylnaphthalines

PERIODICAL: Khimicheskaya nauka i promyshlennost', 1959, Vol 4, Nr 3,

ABSTRACT: It has been shown that 1-methylnaphthalene may be transformed into a 2-isomer by passing it over synthetic aluminosilicagel as catalyst at the optimum temperature of 300 - 350°C. Experiments were made with C¹⁴ in order to determine whether the isomeric transformations are due to the inner-molecular migration of the methyl group. The final product being 2-methylnaphthalene-1-C¹⁴, it is evident that 92.8% of isomerization proceeds within the molecule.

Card 1/2 There are: 1 table and 4 references, 1 of which is Soviet, 1 American, 1 English and 1 German.

The Study of the Isomerization of Monomethylnaphthalines

SOV/63-4-3-25/31

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskij institut imeni D.I. Mendeleyeva
(Moscow Chemical-Technological Institute imeni D.I. Mendeleyev)

SUBMITTED: February 2, 1959

Card 2/2

5.3600

77296
SOV/63-4-6-30/37

AUTHORS: Koptug, V. A., Gerasimova, T. N., Vorozhtsov, N. N., Jr.

TITLE: Brief Communication. Isomeric Conversion of Methyl-(1-Chloronaphthyl-8)-Sulfone

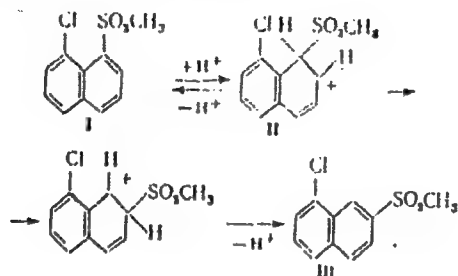
PERIODICAL: Khimicheskaya nauka i promyshlennost', 1959, Vol 4, Nr 6, pp 807-808 (USSR)

ABSTRACT: In the previous work (the same authors, Khim. nauka i prom., 4, Nr 3, 414, 1959), it was shown that alkyl(1-chloronaphthyl-8) sulfone, by heating with conc. HCl, at 200-230° is isomerized into alkyl(1-chloronaphthyl-7) sulfone (III) as follows:

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Brief Communication. Isomeric Conversion
of Methyl-(1-Chloronaphthyl-8)-Sulfone

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SOV/63-4-6-30/37

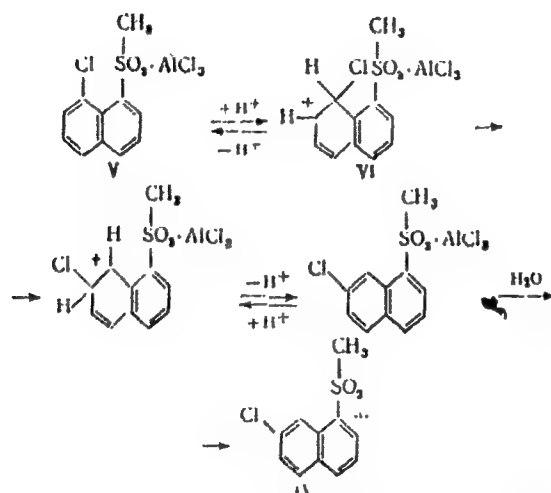


I was heated with 2 g/mole of AlCl₃, for 1 hr at 1250, in the presence of dry HCl, and methyl(2-chloronaphthyl-8) sulfone (IV) was obtained (in 50% yield) instead of III. In the above case the migration of chlorine atom occurred, instead of methyl-sulfonyl radical migration.

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Brief Communication. Isomeric Conversion
of Methyl-(1-Chloronaphthyl-S₂)-Sulfone

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SOV/63-4-6-30/37



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Brief Communication. Isomeric Conversion
of Methyl-(1-Chloronaphthyl-8)-Sulfone

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SOV/63-4-6-30/37

In the present work, the conversion of I in the presence of FeCl_3 was studied. Heating I with FeCl_3 (ratio: 1 to 0.5 g/mole), at 150° for 6 hr, in a stream of HCl forms III. The migration of chlorine atom was practically not observed. In the absence of catalyst, at $230-250^\circ$, and in a stream of HCl, the isomerization was not observed. There are 2 Soviet references.

ASSOCIATION: Mendeleyev Moscow Chemical-Technological Institute
(Moskovskiy khimiko-tekhnologicheskii institut imeni
D. I. Mendeleyeva)

SUBMITTED: May 10, 1959

Card 4/4

5(3)

AUTHORS:

Vorozhtsov, N. N., jun., Koptug, V. A. SOV/79-29-5-29/75

TITLE:

Investigation of Isomeric Transformations of Alkyl Naphthalenes (Izucheniye izomernykh prevrashcheniy alkilnaftalinov).
1. Isomerization of Monomethyl-Naphthalenes (1. Izomerizatsiya monometilnaftalinov).

PERIODICAL:

Zhurnal obshchey khimii, 1959, Vol 29, Nr 5, pp 1541-1545 (USSR)

ABSTRACT:

In the present paper the isomerization of monomethyl naphthalenes on the synthetic aluminum silicate catalyst in the temperature range of 270-450° was investigated in the hydrochloride stream and without it (Table). The results obtained show that the transformation of 1-methyl naphthalene into 2-isomers is a reversible process in contrast with the findings of reference 2. This was confirmed by the separation of 1-methyl naphthalene (in the form of a molecular compound with 2,4,7-trinitrofluorene - Ref 8) from the catalyzate obtained from 2-methyl naphthalene. The results indicated further that the optimum temperature for the isomerization is the range of 300-350°. At 320° per 1 l catalyst at least 140 g 1-methyl naphthalene can be passed through per hour. The yield of the

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Investigation of Isomeric Transformations of Alkyl
Naphthalenes.

SOV/79-29-5-29/75

1. Isomerization of Monomethyl-Naphthalenes.

fraction amounts there up to 75% at a content of 2-isomers of 60%. The side reaction which takes place there - the disproportionation - and which yields naphthalene and polymethyl naphthalenes is of minor importance. The monomethyl naphthalene fraction separated from coal tar is known to contain (Ref 12) about the same quantity of 1- and 2-isomers. A portion of 2-methyl naphthalene can be separated by freezing. The cleavage of the remaining mixture with 20-25% 2-isomers requires complicated methods (Refs 9 and 12). This mixture was found to be useful in the preparation of 2-methyl naphthalene. There are 1 table and 17 references, 2 of which are Soviet.

ASSOCIATION:

Moskovskiy khimiko-tekhnologicheskii institut imeni
D. I. Mendeleyeva (Moscow Chemical-Technological Institute imeni
D. I. Mendeleyev)

SUBMITTED:

May 4, 1958

Card 2/2

5 (3)

AUTHORS:

Vorozhtsov, N. N., junior, Koptyug,
V. A.

SOV/79-29-5-32/75

TITLE:

Investigation of the Isomeric Transformations of Alkyl-naphthalenes (Izucheniye izomernykh prevrashcheniy alkilnaftalinov). II. Synthesis of 1-Methyl-naphthalene-1-C¹⁴ (Sintez 1-metilnaftalina-1-C¹⁴)

PERIODICAL:

Zhurnal obshchey khimii, 1959, Vol 29, Nr 5,
pp 1551-1554 (USSR)

ABSTRACT:

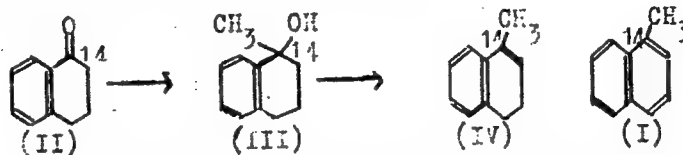
In publications presently available 2-methyl-naphthalene-4-C¹⁴ (Ref 1) and 2-methyl-naphthalene-8-C¹⁴ (Ref 2) are described. In the same way (ring formation of γ -phenyl- β -methyl oleic acid and γ -(p-tolyl)-oleic acid tagged in the carboxyl group to give tetralones, reduction of the keto group and dehydrogenation of 2-methyl-tetrahydro-naphthalene in the presence of palladium) also 1-methyl-naphthalenes may be synthesized, but only with marking in the positions 4, 5 or 8. This way is not applicable to the synthesis mentioned in the title. It was therefore carried out on the basis of 1-keto-1, 2,3,4-tetrahydro-naphthalene-1-C¹⁴ according to the following

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Investigation of the Isomeric Transformations of Alkyl-naphthalenes. II. Synthesis of 1-Methyl-naphthalene-1-C¹⁴

SOV/79-29-5-32/75

scheme:



Due to the influence exerted by methyl magnesium bromide upon II, III resulted, which was transformed with potassium bisulfate at 120° into IV. The dehydrogenation of IV was carried out by heating with sulfur for 15 hours at 220°. The yield was 78.8 % with respect to the initial substance II. I. S. Isayeva and N. A. Morozova assisted in the synthesis described in the experimental section. The refractive index of the product obtained was lower than that given in publications for high-purity 1-methyl-naphthalene. Sulfur compounds, however, were not even quantitatively detected. Probably the substance produced still contained up to 1.5 % 1-methyl-1,2,3,4-tetrahydronaphthalene. In model experiments 1-methyl-naphthalene was therefore converted to picrate, afterwards liberated and distilled off. The determination of

Card 2/3

VOROZHTSOV, N.N., mladshiy; KOPTYUG, V.A.; KOMAGOROV, A.M.

Study of the mechanism of isomerization of naphthalene
nonosulfonic acids. Zhur. VKHO 5 no. 2:232-233 '60.

(MIRA 14:2)

1. Moskovskiy khimiko-tekhnologicheskii institut imeni
D.I. Mendeleyeva.

(Naphthalenesulfonic acid)

5.3620

77903
SOV/79-30-2-54/78

AUTHORS: Koptug, V. A., Gerasimova, T. N., Vorozhtsov, Jr., N. N.

TITLE: Steric Hindrance and the Reactivity of Organic Compounds.
I. Migration of the Alkylsulfonyl Radical in Alkyl
1-Chloronaphthyl-8 Sulfones

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol 30, Nr 2, pp 612-618
(USSR)

ABSTRACT: Isomeric transformation of 1,8-dihalonaphthalenes proceeds easily even without catalysts; this is explained by the steric interaction of the halogen atoms in periposition. Van der Waals' radius of Cl is 1.80 A, that of Br 1.95 A, whereas the distance between C₁ and C₈ in the naphthalene molecule is only about 2.5 A. The molecule is subjected, therefore, to a deformation, and to a deviation of the halogen atoms from the plane of the naphthalene molecule, followed by a change in the values of the bond angles at C₁ and C₈. The hybridization of the valence electrons of similar atoms cannot correspond any longer to the pure

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Steric Hindrance and the Reactivity of
Organic Compounds. I

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SOV/79-30-2-54/78

(sp^2)p type of a plane trigonal system and approaches to some extent the tetrahedral (sp^3)-hybridization. This must facilitate the formation of an activated complex in the attack of these atoms by the electrophilic particle. The increased affinity of C_1 and C_8 atoms of the 1,8-disubstituted naphthalenes towards the electrophilic particles creates, in particular, favorable conditions for the protonation of these atoms and for the formation of σ -complexes. The authors assume, accordingly, that three types of transformations can take place in such cases, as shown in the formulas (1):

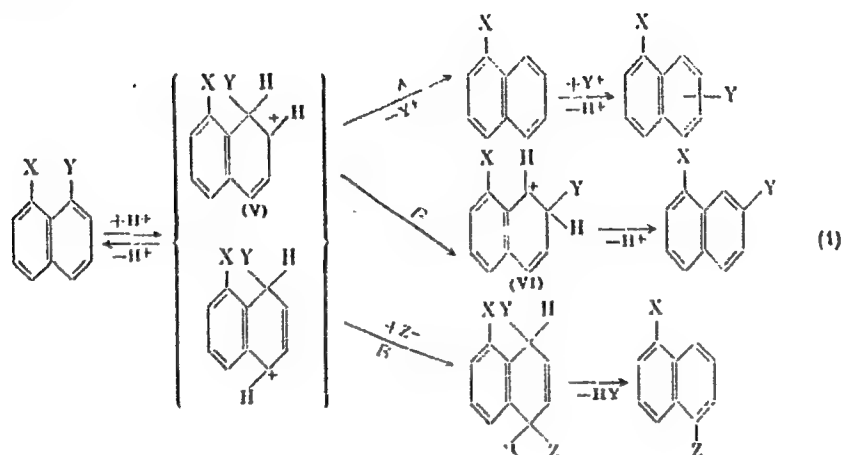
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FORMULA 1 ON FOLLOWING CARD (3/7)

Steric Hindrance and the Reactivity of
Organic Compounds. I

77903

50V/19-30-2-54/18



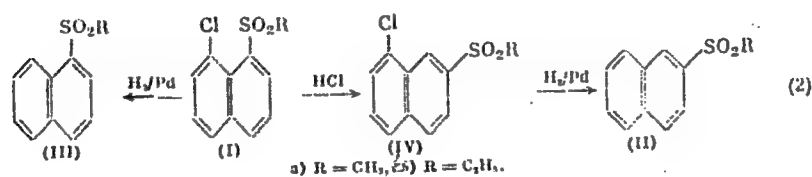
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Steric Hindrance and the Reactivity of
Organic Compounds. I

77903

SOV/79-30-2-54/78

The following transformations can serve as examples of the above reactions: 1,8-dibromo-2,7-dihydroxynaphthalene into 1,6-dibromo-2,7-dihydroxynaphthalene, reaction A; 1,8-dichloronaphthalene into the 1,5-isomer, reaction C ($X=Y=Z=Cl$); 1,8-dichloronaphthalene-3-sulfonic acid into 1,7-dichloronaphthalene, reaction B. The present study deals with the migration of the radical in similarly perisubstituted alkyl 1-chloronaphthyl-8 sulfones (I):



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Steric Hindrance and the Reactivity
of Organic Compounds. I

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Such sulfones were obtained on boiling for 3-5 hr a mixture of methanol solutions of sodium ethoxide and chloronaphthalenesulfinic acid with methyl iodide, ethyl iodide, or benzyl chloride. The sulfone precipitate was filtered, washed with 5% soda solution and water, and recrystallized from methanol. The following new sulfones were obtained: methyl 1-chloronaphthyl-5 sulfone (mp 141.0-141.5° C); methyl 1-chloronaphthyl-7 sulfone (IVa) (mp 160.5-161.0° C); methyl 1-chloronaphthyl-8 sulfone (Ia) (mp 126.5-127.0° C); methyl 2-chloronaphthyl-8 sulfone (mp 117.5-118.0° C); ethyl 1-chloronaphthyl-7 sulfone (IVb) (mp 122.0-122.5° C); ethyl 1-chloronaphthyl-8 sulfone (Ib) (mp 143.0-143.5° C); and benzyl 1-chloronaphthyl-8 sulfone (mp 170.5-171.0° C). Yield of the methyl chloronaphthyl sulfones was 72-88%; that of ethyl chloronaphthyl sulfones, 42-67%. Heating Ia and Ib with concentrated HCl at 200° C and 220-230° C, respectively, caused an irreversible migration of the alkylsulfonyl radical into 3-position and the formation of sulfones IVa and IVb in 40% and 60% yield, respectively. This migration was

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due to the steric interaction of the Cl atom and the sulfonyl radical which caused a deviation of these substituents from the plane of the naphthalene ring. The other sulfones did not change on heating with concentrated HCl; it follows that the migration of the sulfonyl radical is characteristic solely of the 1,8-isomers. Elimination of the chlorine atom was achieved by hydrogenation of the alkyl chloronaphthyl sulfones in methanolic alkali solution over Pd. In this reaction, methyl 1-chloronaphthyl-5 sulfone, methyl 1-chloronaphthyl-8 sulfone, and methyl 2-chloronaphthyl-8 sulfone gave, respectively, methyl naphthyl-1 sulfone (mp 101.5-102.0° C from methanol), and methyl 1-chloronaphthyl-7 sulfone gave methyl naphthyl-2 sulfone (mp 141-141.5° C). Similarly, ethyl 1-chloronaphthyl-8 sulfone gave ethyl naphthyl-1 sulfone (mp 88-89° C), and ethyl 1-chloronaphthyl-7 sulfone gave ethyl naphthyl-2 sulfone (mp 42-44.5° C). Yield of the dechlorinated sulfones was 83.5-97%. There are 1 table; and 31 references, 7 U.S., 6 U.K., 1 Canadian, 2 French, 1 Swedish, 1 Danish, 7 German, and 6 Soviet. The 5 most recent U.S. and U.K. references are: K. B. Everard, L. E. Sutton, J. Chem. Soc., 1949, 2312; D. M. Donaldson, J. M. Robertson, *ibid.*, 1953,

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Steric Hindrance and the Reactivity of
Organic Compounds. I

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17; E. Harnik, F. H. Herbststein, G. M. J. Schmidt, *ibid.*,
1954, 3288; same authors, *ibid.*, 1954, 3303; L. Bateman,
F. W. Shipley, *ibid.*, 1958, 2888.

ASSOCIATION: D. I. Mendeleyev Moscow Chemical-Technological Institute
(Moskovskiy khimiko-tekhnologicheskii institut imeni
D. I. Mendeleyeva)

SUBMITTED: February 24, 1959

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78299

SOV/79-30-3-53/69

AUTHORS: Vorozhtsov, N. N., Jr., Koptug, V. A.

TITLE: Investigations of Isomeric Conversions of Alkyl-naphthalenes. III. Mechanism of Isomerization of Monomethylnaphthalenes

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol 30, Nr 3, pp 999-1007 (USSR)

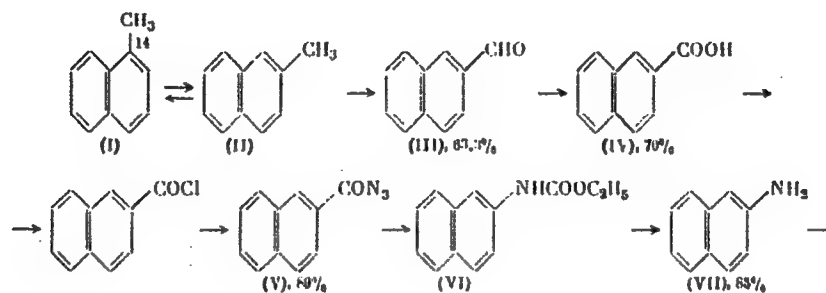
ABSTRACT: Isomerization of 1-methylnaphthalene-1-C¹⁴ (I) over an alumina-silica catalyst at 320° in a flow of HCl was studied in order to explain the mechanism of conversion of monoalkylnaphthalenes. Synthesis and properties of I were described in the authors' previous work (ZhOKh, 29, 1551, 1959). It was found that under the above conditions I is mainly converted into 2-methylnaphthalene-1-C¹⁴. Content of the latter in the 2-methylnaphthalene-x-C¹⁴ (II) obtained was determined by a new method worked out by the authors. The method is based on the removal of C₁

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Alkylnaphthalenes. III. Mechanism of
Isomerization of Monomethylnaphthalenes

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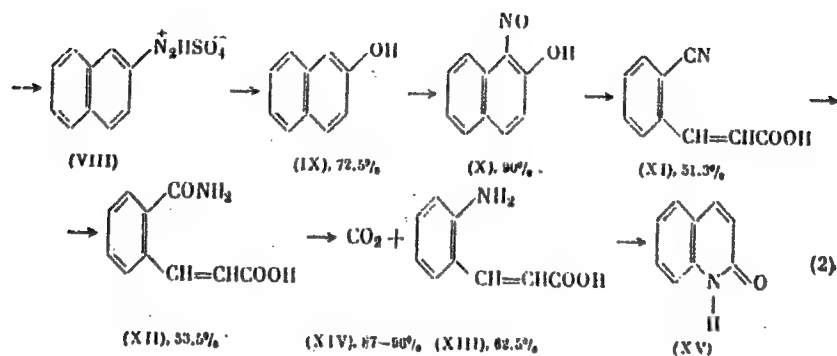
from the molecule and comparison of its radioactivity
with the radioactivity of the remaining part of the
molecule. The process can be summarized by the
following scheme:



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Isomerization of Monomethylnaphthalenes

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Alkylnaphthalenes. III. Mechanism of
Isomerization of Monomethylnaphthalenes

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According to the radioactivity measured (see table),
the 2-isomer of I contains 94.5% 2-methylnaphthalene-1-
-C¹⁴.

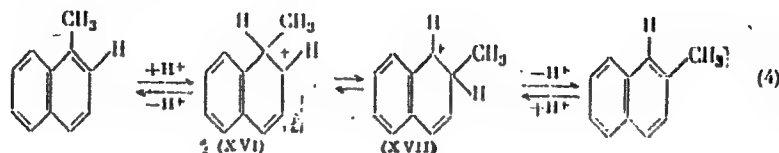
a	(b)	
	(c)	%
$o\text{-C}_8\text{H}_7(\text{CONH}_2)\text{CH}=\text{CHCOOH}$ (XII)	4025 ± 2	100
CO_2 (XIV)	3917 ± 20	97.3
$o\text{-C}_8\text{H}_7(\text{NH}_2)\text{CH}=\text{CHCOOH}$ (XIII)	230 ± 5	5.7
$\text{C}_6\text{H}_5(\text{NH})\text{CH}=\text{CHCO}$ (XV)	216	5.4

The intramolecular mechanism of isomerization of
monomethylnaphthalene is proved by the data obtained.
It can be expressed as follows:

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Investigations of Isomeric Conversions of
Alkynaphthalenes. III. Mechanism of
Isomerization of Monomethylnaphthalenes

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There are 1 table; and 32 references, 7 U.S., 2 U.K., 8 German, 1 Swiss, 14 Soviet. The 5 most recent U.S. and U.K. references are: E. R. Boedeker, W. E. Erner, J. Am. Chem. Soc., 76, 3591 (1954); I. Pigman, E. Del Bel, M. B. Neuworth, J. Am. Chem. Soc., 76, 6169 (1954); H C. Brown, H. Jungk, J. Am. Chem. Soc., 77, 5579 (1955); N. Donaldson, The Chemistry and Technology of Naphthalene Compounds, London, 3 (1958); Elsevier's Encyclopedia of Org. Chem. Series III, Vol 12B, 99 (1952).

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Investigations of Isomeric Conversions of
Alkynaphthalenes. III. Mechanism of
Isomerization of Monomethylnaphthalenes

78299

SOV/79-30-3-53/69

ASSOCIATION: D. I. Mendeleyev Moscow Institute of Chemical Technology
(Moskovskiy khimiko-tehnologicheskij institut imeni
D. I. Mendeleyeva)

SUBMITTED: April 16, 1959

Card 6/6

KOPTYUG, V.A.; GERASIMOVA, T.N.; PLAKHOV, V.A.

Isomeric transformations of sulfones of the naphthalene series in
the presence of metal halides. Zhur.ob.khim. 31 no.5:1611-1621
My '61. (MIRA 14(5))

1. Moskovskiy khimiko-tekhnologicheskii institut imeni D.I.Mendeleeva.
(Sulfone) (Isomerization)

VOROZHTSOV, N.N., mladshiy; KOPTYUG, V.A.; KOMAGOROV, A.M.

Study of the isomerization of naphthalene monosulfonic acids
by the tracer method. Zhur.ob.khim. 31 no.10:3330-3341 0 '61.
(MIRA 14:10)

1. Moskovskiy khimiko-tekhnologicheskoy institut imeni D.I.
Mendeleyeva i Novosibirskiy institut organicheskoy khimii
Sibirskogo otdeleniya Akademii nauk SSSR.
(Naphthalenesulfonic acid)

KOPTYUG, V.A.; GERASIMOVA, T.N.; VOROZHTSOV, N.N., mladshiy

Steric hindrances and reactivity of organic compounds. Part 11:
 β -Naphthalenesulfonic acid as a catalyst of isomerization of
compounds with steric hindrances. Zhur.ob.khim. 31 no.10:3341-
3343 0 '61. (MIRA 14:10)

1. Novosibirskiy institut organicheskoy khimii Sibirskogo
otdeleniya Akademii nauk SSSR.
(Naphthalenesulfonic acid) (Isomerization)

KOPTYUG, V.A.; PLAKHOV, V.A. (Moskva)

Ultraviolet absorption spectra of sulfones in the naphthalene series.
Zhur. fiz. khim. 35 no. 4:887-891 Ap '61. (MIRA 14:5)

1. Khimiko-tekhnologicheskii institut im. D.I. Mendeleeva.
(Sulfone—Spectra)

KOPTYUG, V.A.; ISAYEV, I.S.; VOROZHTSOV, N.N.

Method of cleaving toluene- ^{14}C with the purpose of determining the position of the label in the nucleus. Dokl. AN SSSR 137 no.4:866-868 Ap '61. (MIRA 14:3)

1. Novosibirskiy institut organicheskoy khimii Sibirskogo otdele-
niya AN SSSR i Moskovskiy khimiko-tekhnologicheskoy institut im.
D. I. Mendeleeva. 2. Chlen-korrespondent AN SSSR (for Vorozhtsov).
(Toluene) (Carbon---Isotopes)

KOPTYUG, V.A.; KOMAGOROV, A.M.

Migration of chlorine atom in chloronaphthoic and chloronaphthalene-sulfonic acids. Zhur.VKHO 7 no.1:111 '62. (MIRA 15:3)

1. Novosibirskiy institut organicheskoy khimii Sibirskogo otdeleniya AN SSSR.

(Naphthoic acid) (Naphthalenesulfonic acid) (Chlorine)

KOPTYUG, V.A.; PLAKHOV, V.A.

Steric hindrance and reactivity of organic compounds. Part 4:
Certain characteristics of the ultraviolet absorption spectra
of peri-substituted naphthalenes. Zhur. ob. khim. 32 no.1:
256-259 Ja '62. (MIRA 15:2)

1. Novosibirskiy institut organicheskoy khimii Sibirskogo otdeleniya
AN SSSR i Moskovskiy khimiko-tekhnologicheskoy institut imeni
Mendeleeva.

(Naphthalene--Spectra)

KOPTYUG, V.A.; VOLODARSKIY, L.B.; VOROZHTSOV ml., N.N.

Interaction of 2-halo-1-keto-1,2,3,4,-tetrahydronaphthalenes with
hydroxylamine. Zhur.ob.khim. 32 no.5:1613-1619 My '62.
(MIRA 15:5)

1. Novosibirskiy institut organicheskoy khimii Sibirskogo
otdeleniya AN SSSR.

(Naphthalene) (Hydroxylamine)

KOPTYUG, V.A.; GERASIMOVA, T.N.

Isomerization of sulfones of the benzene series. Zhur.ob.khim.
32 no.11:3780-3796 N '62. (MIRA 15:11)

1. Novosibirskiy institut organicheskoy khimii Sibirskogo
otdeleniya AN SSSR.
(Sulfones) (Isomerization)

KOPTYUG, V.A.; ISAYEV, I.S.; VOROZHTSOV, N.N., mladshiy

Migration of the methyl group in a toluene molecule under the effect of aluminum bromide and hydrogen bromide. Dokl. AN SSSR 149 no. 1:100-103/Mr '63. (MIRA 16:2)

1. Novosibirskiy institut organicheskoy khimii Sibirskogo otdeleniya AN SSSR. 2. Chlen-korrespondent AN SSSR (for Vorozhtsov ml.)

(Toluene)

(Isomerization)

(Methyl group)

KOPTYUG, V.A.; VOLODARSKIY, L.B.

Structure and transformations of the condensation products of
N-(1-hydroxyimino-1,2,3,4-tetrahydronaphthyl-2)-hydroxylamine
with aldehydes. Zhur.VKHO 8 no.1:112-113 '63. (MIRA 16:4)

1. Novosibirskiy institut organicheskoy khimii Sibirskogo
otdeleniya AN SSSR.

(Hydroxylamine)

(Aldehydes)

KOPTYUG, V.A.; VOLODARSKIY, L.B.

Rearrangement of 5-acyloxy-6-alkyl-5,6-dihydro-
[1',2'3'4'-tetrahydronaphth(1,2',3',4')-1,2,5-oxdiazines]
to derivatives of dibenz-(a,h) phenazine. Zhur.VKHO 8 no.1:115
'63. (MIRA 16:4)

1. Novosibirskiy institut organicheskoy khimii Sibirskogo
otdeleniya AN SSSR.

(Oxadiazine)

(Dibenzophenazine)

(Rearrangements (Chemistry))

GERASIMOVA, T.N.; KOPTYUG, V.A.

Isomeric transformations of methyl (chloronaphthyl) sulfones.
Zhur.ob.khim. 33 no.2:601-606 F '63. (MIRA 16:2)

1. Novosibirskiy institut organicheskoy khimii Sibirskogo
otdeleniya AN SSSR.
(Sulfone) (Isomerization)

KOPTYUG, V.A.; REZVUKHIN, A.I.; ZAYEV, Ye.Ye.; MOLIN, Yu.N.

Structure of the complex of mesitylene with aluminum bromide and
hydrogen bromide. Izv. AN SSSR. Ser.khim. no.9:1700 S '63.
(MIRA 16:9)

1. Novosibirskiy institut organicheskoy khimii i Institut
khimicheskoy kinetiki i goreniya Sibirskogo otdeleniya AN SSSR.
(Mesitylene) (Aluminum bromide) (Hydrobromic acid)

KOPTYUG, V.A.; ISAYEV, I.S.

Mechanism of dichlorobenzene isomerization. Izv. AN SSSR. Ser.khim.
no.3:582-583 Mr '64. (MIRA 17:4)

1. Institut organicheskoy khimii Sibirskogo otdeleniya AN SSSR.

KOPTYUG, V.A.; VOLODARSKIY, L.B.; BAYEVA, I.K.

Use of ultraviolet and infrared spectra for determining the structure of condensation products of N-(1-oximino-1,2,3,4-tetrahydro-2-naphthyl) hydroxylamine with aromatic aldehydes. Zhur.ob.khim. 34 no.1:151-157 (MIRA 17:3)
Ja '64.

1. Novosibirskiy institut organicheskoy khimii Sibirskogo otdeleniya AN SSSR.

VOLODARSKIY, L.B.; KOPTYUG, V.A.

Interaction of N-(1-oximino-1,2,3,4-tetrahydro-~~2~~-naphthyl)hydroxyl-
amine with aliphatic aldehydes. Zhur.ob.khim. 34 no.1:227-234 Ja '64.
(MIRA 17:3)

1. Novosibirskiy institut organicheskoy khimii Sibirskogo otdeleniya
AN SSSR.

KOPTYUG, V.A.; BAYEVA, I.K.; SHUBIN, V.G.; KORCHAGINA, D.V.;
KOMAGOROV, A.M.; REZVUKHIN, A.I.

Infrared spectra of protonated aromatic hydrocarbons. Izv.
AN.SSSR.Ser.khim. no. 5:948 My '64. (MIRA 17:6)

1. Novosibirskiy institut organicheskoy khimi Sibirskogo
otdeleniya AN SSSR.

VOLODARSKIY, L.B.; KOPTYUG, V.A.

Conversion of the derivatives of 1',2',3',4'-tetrahydronaphth
(1',2' : 3,4)-1,2,5-hydroxydiazine to dipiperidinodibenzophenazines.
Zhur. ob. khim. 34 no.9:3046-3052 S '64.

(MIRA 17:11)

1. Novosibirskiy institut organicheskoy khimii Sibirskogo otdeleniya
AN SSSR.

KOPTYUG, V.A.; ISAYEV, I.S.; GERSHTEYN, N.A.; BEREZOVSKIY, G.A.

Mechanism of dichlorobenzene isomerization. Zhur. ob. khim.
34 no.11:3779-3783 N '64 (MIRA 18:1)

1. Novosibirskiy institut organicheskoy khimii Sibirskogo
otdeleniya AN SSSR.

KOPTYUG, V.A.; REZVUKHIN, A.I.; ZAYEV, Ye.Ye.; MOLIN, Yu.N.;

Complexes of aromatic hydrocarbons with metal halides and hydrogen halides. Part 1: Nuclear magnetic resonance spectra of mesitylene complex with aluminum and hydrogen bromides. Zhur. ob. khim. 34 no.12:3999-4003 D '64 (MIRA 18:1)

1. Sibirskoye otdeleniye AN SSSR, Novosibirskiy institut organicheskoy khimii i Institut khimicheskoy kinetiki i goreniya.

KOPTYUG, V.A.; SHUBIN, V.G.; REZVUKHIN, A.I.

Rapid migration of the methyl group in a heptamethylbenzenonium
ion. Izv. AN SSSR Ser. khim. no.1:201-202 '65.

(MIRA 18:2)

1. Novosibirskiy institut organicheskoy khimii Sibirskogo otdeleniya
AN SSSR.

KOPTYUG, V.A.; REZVUKHIN, A.I.; SHUBIN, V.G.; KORCHAGINA, D.V.

Complexes of aromatic hydrocarbons with metal halides and hydrogen halides. Part 2: Proton magnetic resonance spectra of complexes of methylbenzenes with aluminum bromide and hydrogen bromide. Zhur. ob. khim. 35 no.5:864-870 My '65.
(MIRA 18:6)

1. Novosibirskiy institut organicheskoy khimii Sibirskogo otdeleniya AN SSSR.

KOPTYUG, V.A.; SHUBIN, V.G.; BAYEVA, I.K.; KORCHAGINA, D.V.; KOMAGOROV,
A.M.; REZVICHIN, A.I.

Complexes of aromatic hydrocarbons with metal halides and hydrogen
halides. Part 3: Infrared absorption spectra of complexes formed
by methylbenzene with aluminum bromide and hydrogen bromide.
Zhur. ob. khim. 35 no.6:1111-1116 Ja '65. (MIRA 18:6)

1. Novosibirskiy institut organicheskoy khimii.

KOPTYUG, V.A.; KOMAGOROV, A.M.

Conversions of toluic acids in the presence of aluminum chloride.
Zhur. org. khim. 1 no.1;113-118 Ja '65. (MIRA 18:5)

1. Institut organicheskoy khimii Sibirskogo otdeleniya AN SSSR.

KRASNIKOVA, A.Ya.; KOPTSIK, V.A.

X-ray diffraction study of a superlattice phase transition in
(NF_4)₂ BeF₄ crystals. Izv. AN SSSR. Ser. fiz. 29 no.6:903-906
Je 165. (MIRA 18:6)

1. Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta
imeni Lomonosova.

KOPTSIK, V.A.; TOSHEV, S.D.

Observation of the domain structure in low-temperature ferro-
electricity using the fronted dew method. Izv. AN SSSR. Ser. fiz.
29 no.6:956-961 Je '65. (MIRA 18:6)

ISAYEV, I.S.; KARABEKOV, A.; KOPTYUG, V.A.

Mechanism of isomerization of aromatic bromo derivatives. Zhur.
org. khim. 1 no.7:1248-1251 J1 '65.

(MIRA 18:11)

1. Novosibirskiy institut organicheskoy khimii Sibirskogo otdeleniya
AN SSSR.

VOLOBARSKIY, L.B.; KOPTYUG, V.A.

Oxidizing decomposition of
N-(1-hydroximino-1,2,3,4-tetrahydro-2-naphthyl) hydroxylamine.
Zhur. org. khim. 1 no.7:1268-1272 31 '65. (MIRA 18:11)

1. Novosibirskiy institut organicheskoy khimii Sibirskogo
otdeleniya AN SSSR.

KOFTYUG, V.A., SHKOL'NIK, S.A.

Mechanism of isomerization of monosulfonic acids of naphthalene.
Part 2: Selecting the conditions for determining the composition
of reaction products. Zhur. org. khim. 1 no.8:1448-1452 1965

Mechanism of isomerization of monosulfonic acids of naphthalene.
Part 3: Isomerization of 1-naphthalene-1-sulfonic acid with C^{14}
in concentrated sulfuric acid. Ibid.:1452-1457

(MIRA 18:11)

1. Novosibirskiy institut organicheskoy khimii Sibirskogo
otdeleniya AN SSSR.

GERASIMOVA, T.N.; BUSHMELEV, V.A.; KOPTYUG, V.A.

Rearrangement of N-aryl and N-alkylsufonyl derivatives of primary aromatic amines to aminosulfones. Zhur. org. khim. 1 no.9:1667-1673 S '65. (MIRA 18:12)

1. Novosibirskiy institut organicheskoy khimii Sibirskogo otdeleniya AN SSSR. Submitted October 20, 1964.

KOPTYUG, V.A.; ISAYEV, I.S.; YERYKALOV, Yu.G.; SPRYSKOV, A.A.

36

Isomerization of o-dichlorobenzene in the presence of $AlCl_3$.
Zhur. org. khim. 1 no. 12:2081-2083 D '65 (MIRA 19:1)

1. Novosibirskiy institut organicheskoy khimii Sibirskogo ot-
deleniya AN SSSR i Ivanovskiy khimiko-tekhnologicheskoy in-
stitut. Submitted November 9, 1964.

VOLODARSKIY, L.B.; KOPTYUG, V.A.; LYSAK, A.N.

Interaction between α -haloketones and hydroxylamine. Zhur.
VKHO 10 no. 6:701-702 '65 (MIRA 19:1)

1. Novosibirskiy institut organicheskoy khimii Sibirskogo ot-
deleniya AN SSSR. Submitted March 3, 1965.

KOPTYUKH, M.M., brigadir

How our brigade utilizes agricultural machinery for the procurement of manure. Mekh. sil'. hosp. 14 no.10:20 0 '63. (MIRA 17:2)

1. Torfozagotovitel'naya brigada kolkhoza im. Kalinina Malinskogo rayona Zhitomirskoy oblasti.

KOPULYANSKIY, L.B.

Lower squeezing rollers from steel tubes for sizing machines.
Tekst.prom. 14 no.7:51 J1 '54. (MLRA 7:8)

1. Inshener Leningradskoy fabriki im. P.Anisimova.
(Textile machinery)

KOPULYANSKIY, L.B., insh.

~~Control of the corrosive effect of DMS. Tekst. prom. 18 no.3:58~~
(sizing (Textile) (Textile machinery--Corrosion) (MIRA 11:3))

MAKAROV, L.I.; VIASOV, Yu.G.; KOZHETS, R. (Leningrad)

Thermodynamic study of the system $KBr - RbBr - H_2O$ and 5 and 45°C.
Zhur. fiz. khim. 38 no.8:1933-1941 Ag 164. (MIRA 18:1)

L. Leningradskiy gosudarstvennyy universitet.

MACASEK, F., promovany chemik; TRESA, Fr., inz.; MIKULAJ, Vl.
promovany chemik; KOPUNEC, R., promovany radiochemik

Use of radioactive isotopes for water indication in
the examination of bottom water flow. Vodohosp cas
12 no. 1: 122-133 '64.

1. Chair of Inorganic and Physical Chemistry, Faculty
of Natural Sciences, Comenius University, Bratislava;
Chair of Basic Construction, Geology and Dams, Faculty
of Construction Engineering, Slovak Higher School of
Technology, Bratislava.

MAKARGV, L.L.; VLASOV, Yu.G.; KOPUNETS, R.

Thermodynamic study of the system $\text{KBr} - \text{RbBr} - \text{H}_2\text{O}$ at 5 and
45°C. Part 1. Zhur. fiz. khim. 37 no.12:2763-2767 D '63.
(MIRA 17:1)

1. Leningradskiy universitet imeni Zhdanova.

S/054/63/004/001/013/022
B101/B215

AUTHORS: Shul'ts, M. M., Peshekhonova, N. V., Kopuntsova, T. A.,
Shandalova, L. P.

TITLE: Effect of alkaline earth oxides on the electrode properties
and chemical stability of sodium silicate glasses

PERIODICAL: Leningrad. Universitet. Vestnik. Seriya fiziki i khimii,
no. 1, 1963, 114-120

TEXT: Sodium silicate glasses containing 15, 20, or 25 mole% of Na_2O
and additions of 0 - 20 mole% BaO , CaO , MgO , or BeO were studied by
plotting the curves E versus pH. Results: (1) The upper limit of the
 H^+ function is shifted into the alkaline region by BaO , hence, the total
region of the H^+ function is extended. The exchange constant becomes
1-2 orders of magnitude smaller than that of the binary glass. (2) CaO
increases the H^+ function range. In the acid region this increase is
1.5 - 2.0 pH units. The exchange constant becomes 1-2 orders of
magnitude smaller. (3) MgO narrows the range of the H^+ function. At
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Effect of alkaline earth oxides on the ...

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B101/B215

pH = 10 - 11, the Na^+ function is complete. The exchange constant becomes 1-2 orders of magnitude larger. (4) BeO has the same effect as MgO , but acts more intensively. Already 5 mole% BeO causes the formation of the Na^+ function. The exchange constant increases by 4 - 6 orders of magnitude. (5) Glasses containing BaO as their third component have the widest H^+ function range, whereas glasses containing BeO have the narrowest. (6) All alkaline earth oxides increase the stability of the glass to H_2O and 0.1 N HCl . The effect of alkaline earth oxides on the electrode properties of the glasses is explained by the mainly modifying effect of BaO . MgO and BeO , however, form strongly acid ionogenic $[\text{RO}_{4/2}]^{2-}$ groups, thus facilitating the substitution of alkali cation for proton. There are 2 figures and 5 tables.

SUBMITTED: October 1962

Card 2/2

KOPUPAYEVA, D.I.; LAVROVSKIY, K.P.; ROZENTAL', A.L.

Dehydrogenation of isopentane in a vacuum on an industrial chromia-alumina catalyst. Neftekhimiya 3 no.2:177-180 Mr-Apr '63.
(MIRA 16:5)

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F.L.; LISITSKAYA, M.M.; LITVIN, I.P.; MIROPOL'SKIY,
Ya.A.; NADZHAROVA, N.M.; SAVINA, V.I.; POLUEKTOVA, I.Ye.;
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1. Moscow. Tsentral'nyy nauchno-issledovatel'skiy institut
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KOPVILLM, Kh.G., aspirant

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(Moths)

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MOSKOVSKAYA OBLAST, AND THE ^{possibilities of} ~~OPPORTUNITIES~~ FOR INCREASING
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MATERIALS										PROCESSES AND PROPERTIES									
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B-I-3

Abstract of carbon acids, from acids, and reduced by iron
 ore on products of low-temperature oxidation of oil shale.
 J. K. Kinsinger (Kans. Inst. Technol., S. 30-34).—Treatment
 with H₂ at 600–650/70–815 atm. in presence of the above
 substances lowered the S content of the oils obtained. With
 15–20% of CaO the gas produced was practically free from
 CO₂ and H₂O. By 25 atm and Fe₂O₃ (5–6%) had a deaer-
 atizing effect but did not bind CO₂. (Can. Ass. 4)

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KOPVILLEM, U. Kh.: *Cand* Master Phys-Math Sci (diss) -- "On the effect of internal interactions on the shape of the line of paramagnetic absorption". Kazan', 1958.
7 pp (Min Higher Educ USSR, Kazan' Order of Labor Red Banner State U im V. I. Ul'yanov-Lenin), 150 copies (KL, No 5, 1959, 142)

KOPVILLEM, U.Kh.

Spin-spin paramagnetic relaxation time at low temperatures in
the case of not only spin magnetism. Izv. vys. ucheb. zav.; fiz.
no.3:13-20 '58. (MIRA 11:9)

1. Kazanskiy gosudarstvennyy universitet imeni V.I. Ul'yanova-
Lenina.

(Nuclear magnetic resonance) (Low temperature research)

AUTHOR:

~~Kopvillem, U. Kh.~~

56-34-4-59/60

TITLE:

The Second Momentum of the Curve of Paramagnetic Absorption in the Case of a not Purely Spin-Dependent Magnetism (Vtoroy moment krivoy paramagnitnogo pogloshcheniya v sluchaye ne chisto spinovogo magnetizma)

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol. 34, Nr 4, pp. 1040 - 1042 (USSR)

ABSTRACT:

Five previous works referred to in this paper give formulae for the computation of the second momentum $\langle \nu^2 \rangle$ of the curve $f(\nu)$ of the paramagnetic absorption with a lacking stable magnetic field H_0 and for the second momentum $\langle (\Delta \nu)^2 \rangle$ of the curve $\phi(\nu)$ of the paramagnetic resonance. ν denotes the frequency of the variable magnetic field directed along the t -axis. These formulae, however, are only valid for the case of absorption in magnetically isotropic crystals and are not suitable for the investigation of the internal interrelations in magnetically anisotropic crystals because the g -factor depends to a great extent on the direction of the magnetic field H_0 . The present paper finds formulae for the computation of $\langle \nu^2 \rangle$ and $\langle (\Delta \nu)^2 \rangle$

Card 1/2

The Second Momentum of the Curve of Paramagnetic
Absorption in the Case of a not Purely Spin-Dependent Magnetism 56-34-4-59/60

in magnetically anisotropic crystals which contain only magnetically equivalent ions. The author assumes that the energetic basic state of the magnetic ions has a double Kramers' degeneration in the case of $H_0 = 0$ and that only this doublet is occupied. These conditions are for example satisfied in binary nitrates and in the ethyl sulfates of the rare earth elements at helium temperatures. The derived final formulae are written down and explained by means of the coefficients of the spin Hamiltonian. There are 8 references, 1 of which is Soviet.

ASSOCIATION: Kazanskiy gosudarstvenny universitet (Kazan' State University)
SUBMITTED: January 21, 1958

1. Magnetic moments--Analysis 2. Crystals--Magnetic properties

Card 2/2

24 (3)

AUTHOR:

Kopvillem, U. Kh.

SOV/56-35-2-28/60

TITLE:

The Time of the Paramagnetic Spin-Spin Relaxation
in the Absence of a Static Magnetic Field for
 $\text{Co}(\text{NH}_4)_2(\text{SO}_4)_2 \cdot 6 \text{H}_2\text{O}$ at Helium Temperatures
(Vremya spin-spinovoy paramagnitnoy relaksatsii v
otsutstviye staticheskogo magnitnogo polya dlya
 $\text{Co}(\text{NH}_4)_2(\text{SO}_4)_2 \cdot 6 \text{H}_2\text{O}$ pri geliyevykh temperaturakh)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958,
Vol 35, Nr 2 (8), pp 506-507 (USSR)

ABSTRACT:

The author calculates the above-mentioned relaxation time
taking account of the following assumptions: 1) The spin
system consists of an equal number of ions of the two sorts.
2) the ground states of all the ions have a double Kramer
degeneration if there is no static magnetic field H_0 .
3) The spin temperature T is so low that only the ground
doublet is occupied, i. e., the effective spin is equal to
 $S = 1/2$ for any ion. 4) The interactions in the paramagnetics
may be described by the two-particle tensor operators

Card 1/4

The Time of the Paramagnetic Spin-Spin Relaxation
in the Absence of a Static Magnetic Field for
 $\text{Co}(\text{NH}_4)_2(\text{SO}_4)_2 \cdot 6 \text{H}_2\text{O}$ at Helium Temperatures

SOV/56-35-2-28/60

$P_{\gamma\delta}^{Ik} \sigma_{\gamma}^I \sigma_{\delta}^k$ and by the one-particle tensor operators

$(1/2) A_{\gamma\delta}^k \sigma_{\gamma}^I \sigma_{\delta}^k$, where σ_{γ}^I denotes the Pauli matrices, I_{δ} - the matrix of the spin vector. The indices k and δ mark the particles and the coordinate axes respectively, 5) the aperiodic curve $f(\nu)$ of the paramagnetic absorption at $H_0 = 0$ is a Gauss (Gauss) curve; ν denotes the frequency of an alternating magnetic field. Basing on the conditions 1 - 4, the author deduced a formula for the reduced second moment $\langle \nu^2 \rangle$ of the curve $f(\nu)$ of any direction of the field H_t with respect to the principal axes of the tensor χ_0

of static magnetic susceptibility. The theoretical value of $\langle \nu^2 \rangle$ may be immediately compared with the experimental data. If also the condition 5 is taken into account $\langle \nu^2 \rangle$ may be

Card 2/4